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Infinity's End: A Definitive Start to the Universe

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Infinity's End: A Definitive Start to the Universe

The question of the universe's inception is an inquiry that spans across the realms of science, philosophy, and theology. This exploration addresses a fundamental question: did the universe have a beginning, or does it extend infinitely into the past? I answer, yes the universe does have a beginning. Central to this discussion is the Kalam Cosmological Argument (KCA) by William Craig, which posits that the universe has a definitive start. This essay aims to prove the start of the universe by examining the KCA, exploring the concepts of potential versus actual infinity, and engaging with common counter arguments.

The foundation of the KCA is taken from the Muslim theologian Al-Ghazali, "Every being which begins has a cause for its beginning; now the world is a being which begins; therefore, it possesses a cause for its beginning" [1] Al-Ghazali defends his claim in three steps:

1. Whatever begins to exist has a cause of its beginning.
2. The Universe began to exist.
3. Therefore, the universe has a cause for its beginning. [2]

This argument challenges the idea of an infinite past and sets the stage for a deeper investigation into the nature of infinity and its implications for the universe's origins.

Craig decided to restate the first premise in order to navigate away from discussions surrounding the emergence of subatomic particles from quantum decay processes without a cause, which Craig contends are irrelevant to 1'. Asserting the necessity of a cause for the

universe's existence, Craig emphasizes the implausibility of positing a creation ex nihilo—a notion he finds philosophically untenable. Drawing upon insights from quantum cosmologist Christopher Isham, Craig underscores that in quantum decay events, particles do not emerge from nothing but undergo an energetic conversion. Consequently, alleged exceptions to (1) do not undermine the validity of (1').

Craig proceeds to offer three compelling reasons in support of (1'). Firstly he invokes logical reasoning, asserting that something cannot arise from nothing. He illustrates this point using the analogy of magic, suggesting that denying (1') leads to the inconceivable scenario of the universe materializing without any discernible cause—a notion he deems inherently illogical. Craig then questions why, if something can emerge from nothing, this phenomenon is not universally observed. He argues that singling out universes as the sole product of nothingness is inconsistent, as nothingness lacks the capacity to selectively favor one outcome over another.

Lastly, Craig appeals to empirical evidence and scientific consensus to reinforce the credibility of (1'). He highlights that the field of cosmogony operates under the assumption of causal conditions for the universe's origin, aligning with modern scientific understanding. By employing logical rigor and appealing to both intuition and scientific consensus, Craig presents a compelling case for the causal explanation of the universe's genesis. [2]

The foundation of the KCA, rooted in Al-Ghazali's assertion that every beginning has a cause, resonates with my understanding of the universe's origins. Ghazali's logical progression, highlighting the necessity of a cause for the universe's inception, aligns with my intuitive reasoning. It makes most sense to me because, from what I see on Earth, things have never appeared out of thin air. Moreover, I've learned that energy cannot be created or destroyed.

Therefore, for all the energy in the universe to be created, it must have been created by God, who doesn't have to abide by our laws of physics. As Craig reinforces Ghazali's premise, his invocation of logical reasoning and empirical evidence bolsters my confidence in the causal explanation of the universe's genesis.

Premise 2 is more controversial, which posits that the universe began to exist. This assertion is far from self-evident, prompting an exploration of both philosophical arguments and scientific evidence to substantiate it. [2] The distinction between potential and actual infinity is crucial in understanding the universe's beginning. Potential infinity refers to a quantity that can indefinitely grow larger but never reaches an absolute, fixed quantity. For example, counting natural numbers (1, 2, 3, ...); this mirrors a potential infinite as it's impossible to finish counting because you can always add one to the highest number. [2] Therefore, a potentially infinite series continuously approaches infinity but never reaches it. Essentially, the potential infinite always remains incomplete and finite at any given moment.

Ghazali said that if the universe were eternal, it would entail an infinite regress of past events. Ghazali contended that while potential infinities —ideal limits never reached—are conceivable, actual infinities, where an infinite number of things exist, lead to logical absurdities. He refuted the possibility of an infinite temporal regress by demonstrating the incongruities arising from the existence of an actual infinite. [2]

Critics often cite developments in modern mathematics, particularly in set theory, where the use of actual infinite sets is commonplace, to refute Ghazali's argument. However, Craig argues that while these developments allow for consistent discourse about actual infinities, they do not affirm their existence. He illustrates this through "Hilbert's Hotel," a thought experiment

by David Hilbert, which exposes the absurdities of an actual infinite. Imagine a hotel with an infinite number of rooms, all occupied. When a new guest arrives, there's no space. But in an infinite hotel with all rooms full, the receptionist can still accommodate a new guest by shifting each current guest to the next room, opening up the first room. Surprisingly, although the hotel is full, there's always room for one more. Even if an infinity of new guests arrives, the receptionist can keep shifting occupants to accommodate them, without ever increasing the total number of guests. This paradox highlights the peculiarities of dealing with infinity. These absurdities exemplify the impossibility of an actual infinite number of things existing. [2]

Imagining an infinite hotel where each room is occupied, yet new guests can always be accommodated, boggles the mind. But beyond its conceptual intrigue, this scenario prompts a practical consideration: if such a hotel were real, how would one even reach their room? The notion of walking through an infinite number of rooms, a journey that could never be completed, underscores the sheer inconceivability of an actual infinite in our physical reality. Just as a picnic table appearing out of thin air defies our understanding of causality, the notion of an infinite hotel challenges our fundamental notions of space, time, and existence.

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Craig defends Ghazali's argument against claims that the concept of infinity is beyond human comprehension, asserting that the absurdities arise from a clear understanding of the actual infinite. He challenges critics to justify the possibility of scenarios like Hilbert's Hotel, ultimately affirming Ghazali's conclusion that the universe must have had a beginning.

In summary, Ghazali's argument can be summarized as follows:

1. An actual infinite cannot exist.
2. An infinite temporal regress of events constitutes an actual infinite.
3. Therefore, an infinite temporal regress of events cannot exist. [2]

Ghazali's second philosophical argument presents a compelling case for the beginning of the universe by examining the concept of an infinite series of past events. He illustrates this concept using analogies like the sequence of falling dominoes and the orbit of celestial bodies, aiming to demonstrate the inherent impossibility of an actual infinite past.

Imagine a sequence of dominoes lined up in a row, each one set to fall when the previous one topples. This sequence represents a series of events occurring one after another, with each domino representing a single event in the past. Now, suppose this sequence extends infinitely into the past, with an infinite number of dominoes stretching back in time. [2]

The absurdity becomes apparent when we attempt to traverse this infinite sequence. To reach any particular domino, we must first traverse an infinite number of preceding dominoes. However, since infinity is by definition endless, there is no starting point from which to begin

traversing the sequence. No matter how far we progress, there are always infinitely more dominoes left to fall before reaching any finite point in the sequence. [2]

This domino example highlights the impossibility of completing an infinite series formed by adding one member after another. Just as it is impossible to count to infinity or count down from it, traversing an infinite series of events presents insurmountable logical obstacles. Before reaching any finite event, an infinite number of preceding events must be traversed, leading to an infinite regress that defies comprehension.

To further illustrate this point, Ghazali presents scenarios such as the perpetual orbit of celestial bodies or the hypothetical scenario of counting down from eternity. In both cases, the logical inconsistencies become apparent when confronted with the idea of an infinite past. Thus, Ghazali's argument elucidates the fundamental flaw in the concept of an infinite past, reinforcing the notion that the series of past events must have had a beginning.

Philosophers Erasmus and Verhoef scrutinize the Infinity Argument (IA) that is used in the Kalam Cosmological Argument (KCA) to support the premise that the universe began to exist. The IA states that actual infinities cannot exist, a premise foundational to establishing the finitude of the past and consequently, the inception of the universe. However, Erasmus and Verhoef highlight a crucial concern they term the Infinite God Objection, which revolves around the implication of the IA on the nature of divine omniscience. According to their critique, the IA's assertion of the impossibility of actual infinities seems to impose limitations on the scope of divine knowledge, contradicting the notion of God's omniscience taken by many proponents of the KCA.

The Infinite God Objection (IGO) raises significant challenges regarding the nature of God, particularly concerning divine attributes like infinity. Critics argue that if actual infinities are impossible, then the traditional understanding of God as infinite becomes problematic. As Graham Oppy points out, this objection implies that an orthodox conception of a monotheistic god cannot truly be infinite if actual infinities are ruled out. [3] However, it's essential to recognize that theologians often attribute a qualitative rather than quantitative meaning to God's infinity. Wolfgang Achtner emphasizes that theologians view God's infinity in terms of qualitative transcendence rather than quantitative magnitude. [3]

The objection from God's infinite nature suggests that if the quantitative infinite is untenable, then God cannot be infinite in the qualitative sense. However, this conclusion is not straightforward, as theologians often stress God's transcendence beyond finite understanding. While this objection may seem forceful, it overlooks the nuanced theological interpretations of infinity.

Another facet of the objection, the Objection from God's Infinite Knowledge (OGIK), contends that omniscience implies knowledge of an actual infinite. Omniscience, defined as knowing all true propositions, necessitates awareness of an endless series of truths. [3] This objection posits that either God knows an actual infinite or is not truly omniscient. The argument is structured to demonstrate that denying the existence of actual infinities while affirming God's omniscience presents a logical inconsistency.

Critics support this argument in two ways. Firstly, they argue that if God knows all future events, which are potentially infinite, then God's knowledge must encompass an actual infinity. Secondly, they contend that God's knowledge of abstract objects, such as mathematical

truths, entails knowledge of an actual infinite. [3] These arguments challenge proponents of the Kalam Cosmological Argument to reconcile their position with the implications for God's omniscience.

Erasmus and Verhoef suggest redefining omniscience to accommodate the implications of the IA, particularly regarding the nature of divine knowledge. They argue that traditional conceptions of omniscience may need to be revised to avoid contradicting the assertion that actual infinities are impossible. However, Loke contends that this proposed redefinition lacks sufficient justification and raises compatibility concerns with the traditional concept of God's knowledge.

Instead of endorsing the redefined omniscience proposed by Erasmus and Verhoef, Loke proposes a nuanced reformulation of the IA. He aims to address objections while maintaining the coherence of the Kalam Cosmological Argument (KCA). By distinguishing between concrete and abstract actual infinities, Loke provides a framework that allows proponents of the KCA to affirm the undivided intuition of God's knowledge without necessarily accepting the problematic redefinition of divine omniscience. [3]

Loke proposes a reformulation of the Infinity Argument (IA) by distinguishing between concrete and abstract actual infinities. While the traditional IA asserts the impossibility of actual infinities across the board, Loke suggests that this dichotomy oversimplifies the nature of infinity. In Loke's reformation, concrete actual infinities—instances where an infinite number of discrete entities exist—are deemed metaphysically impossible. [4] This aligns with the core tenets of the Kalam Cosmological Argument (KCA), which contends that an actual infinite series of events cannot exist in reality. [4]

I say, as I mentioned before, energy cannot be created or destroyed, yet all the energy in the universe was created. Obviously, it was created by God, who does not live by our earthly rules. Therefore, God's knowledge also does not live within time, since He has created it. This perspective challenges the objections raised regarding God's omniscience in light of the Kalam Cosmological Argument. If God exists beyond the constraints of time, as the creator of time itself, then His knowledge transcends temporal limitations. While Erasmus and Verhoef advocate for redefining omniscience to reconcile it with the impossibility of actual infinities, I argue that such a revision overlooks the divine nature of God. Instead, Loke's reformulation of the Infinity Argument offers a better approach. By distinguishing between concrete and abstract actual infinities, Loke provides a framework that preserves the integrity of the Kalam Cosmological Argument while accommodating the qualitative transcendence of God's knowledge. In this light, God's omniscience remains undiminished, extending beyond the confines of time and space.

In conclusion, our exploration into how the universe began, spanning science, philosophy, and theology, raises the question: did the universe have a beginning, or does it extend infinitely into the past? The Kalam Cosmological Argument (KCA) argues for a clear beginning, supported by Al-Ghazali's idea that "everything which begins has a cause". [1]

Craig's defense of the KCA, using logical reasoning and real-world evidence, strengthens the idea that the universe began from a cause. Though not everyone agrees, Ghazali's thoughts on infinity challenge the idea of an endless past. Our journey through the KCA suggests that the universe indeed started, brought about by God. I've supported the KCA's view, seeing its merit in philosophical and empirical terms. This journey prompts us to rethink concepts like causality, infinity, and existence itself.

Works cited

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